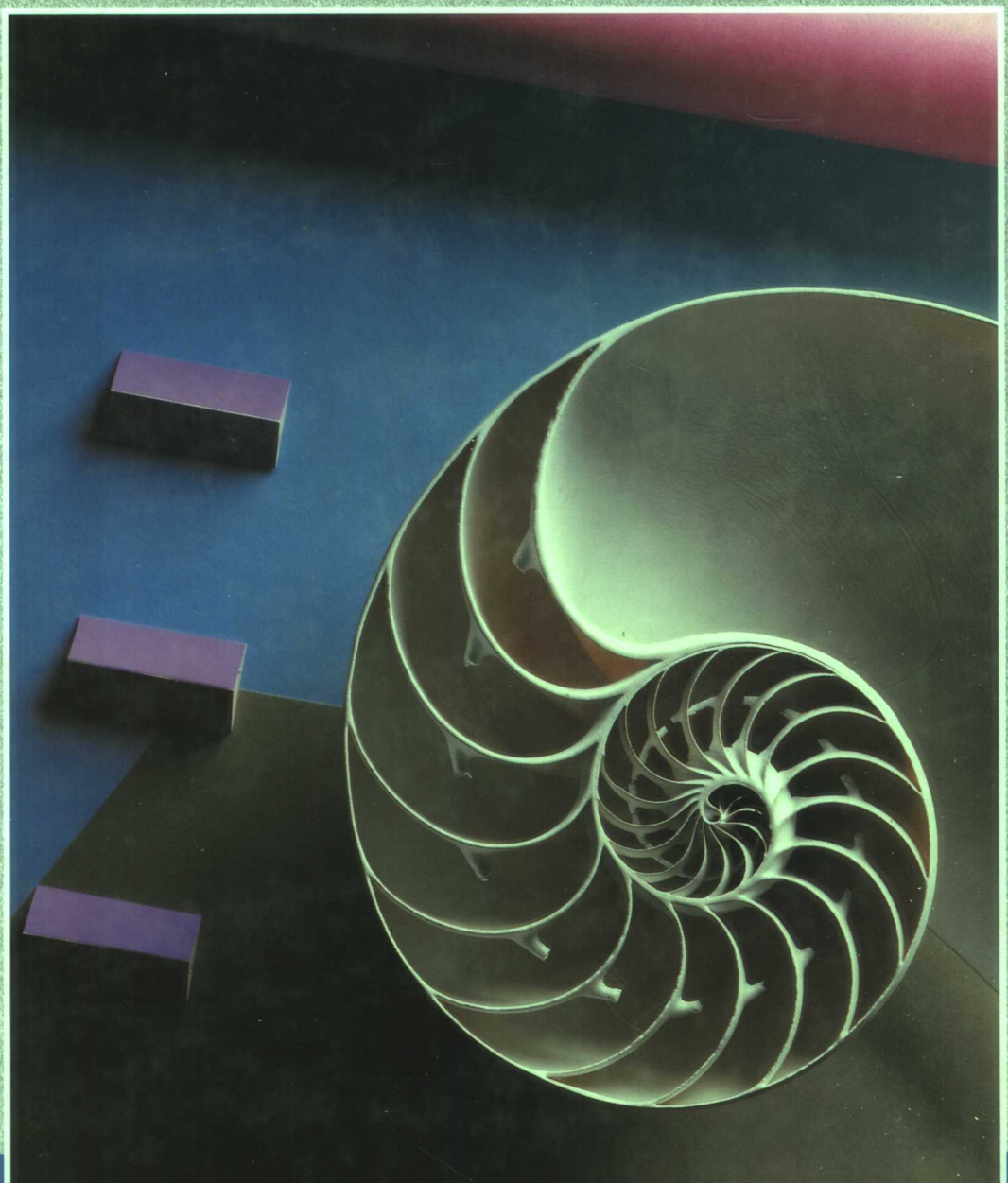
Merrill

Algebra 1

Applications and Connections



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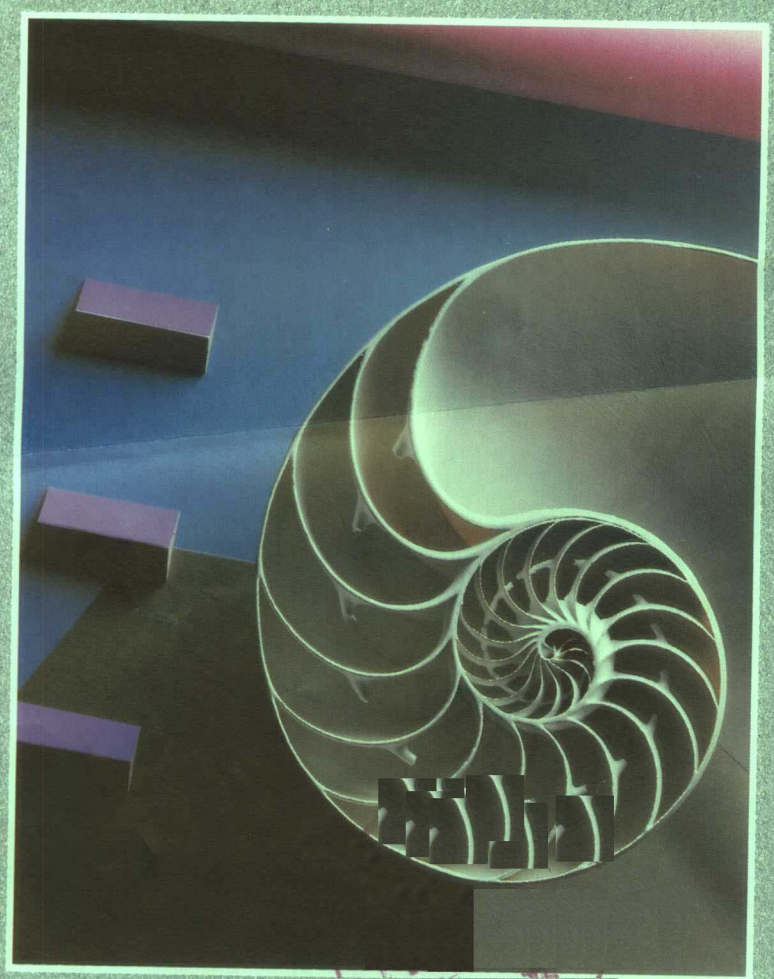

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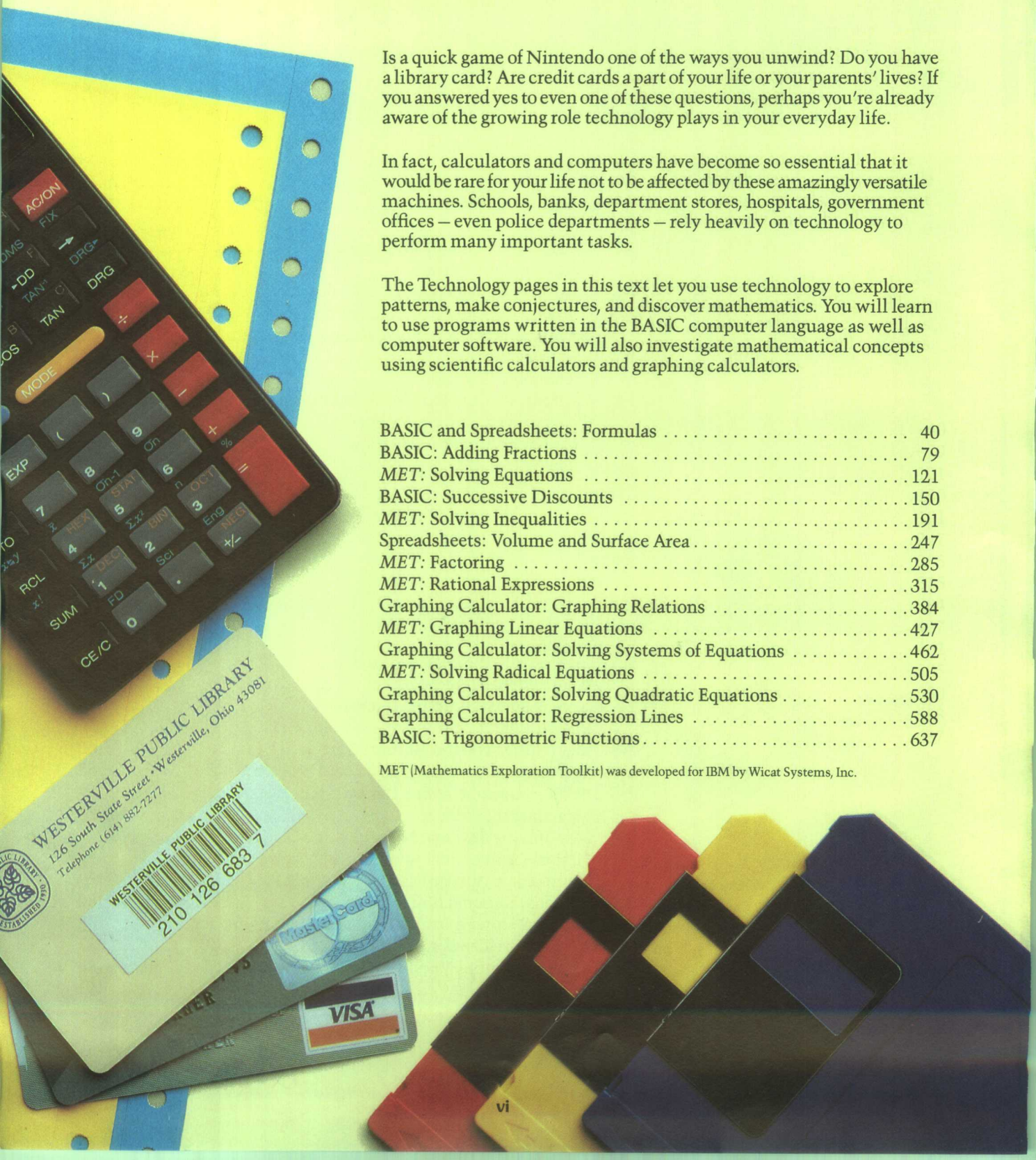

Is a quick game of Nintendo one of the ways you unwind? Do you have a library card? Are credit cards a part of your life or your parents' lives? If you answered yes to even one of these questions, perhaps you're already aware of the growing role technology plays in your everyday life.

In fact, calculators and computers have become so essential that it would be rare for your life not to be affected by these amazingly versatile machines. Schools, banks, department stores, hospitals, government offices – even police departments – rely heavily on technology to perform many important tasks.

The Technology pages in this text let you use technology to explore patterns, make conjectures, and discover mathematics. You will learn to use programs written in the BASIC computer language as well as computer software. You will also investigate mathematical concepts using scientific calculators and graphing calculators.

MET (Mathematics Exploration Toolkit) was developed for IBM by Wicat Systems, Inc.

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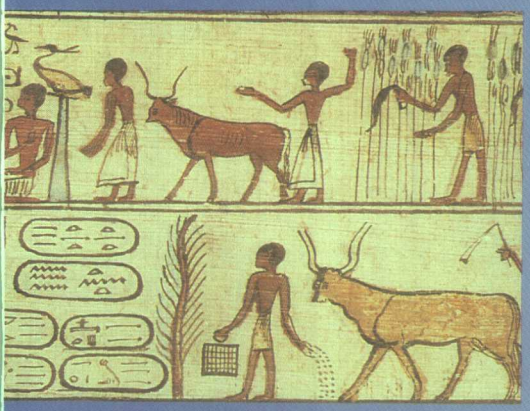

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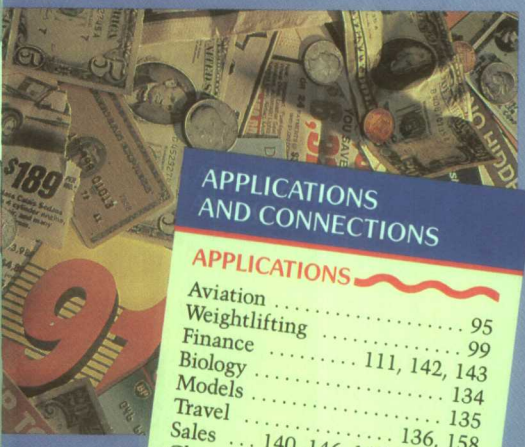

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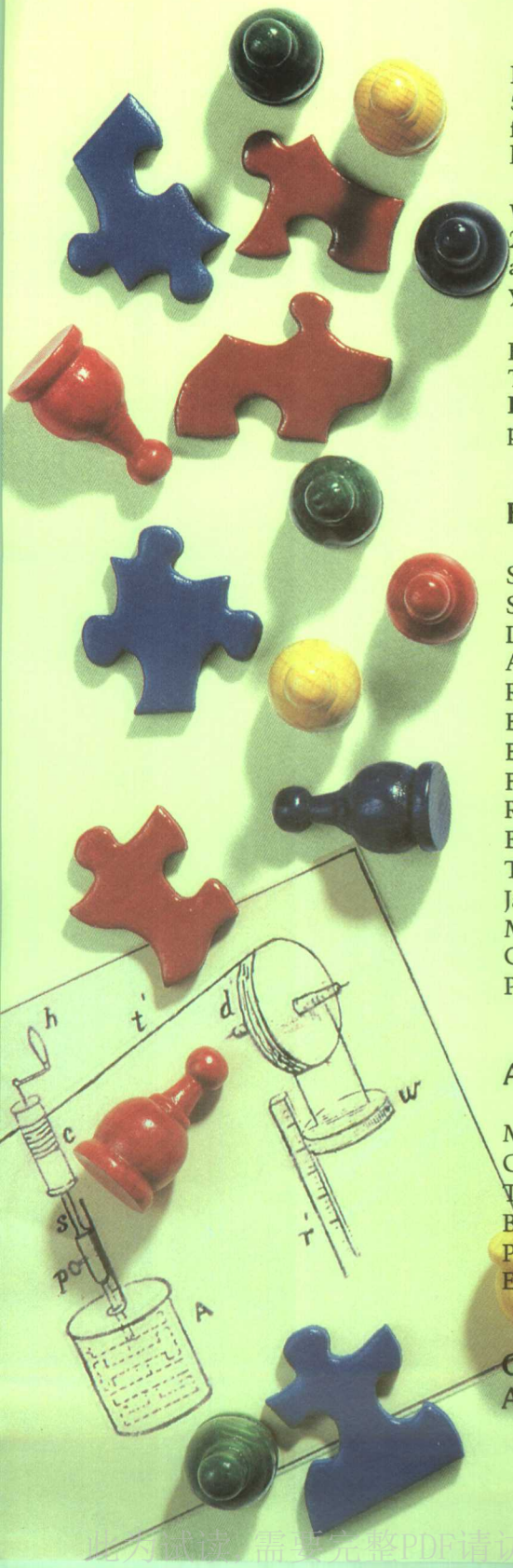


How did algebra get its name? Read the **History Connection** on page 549 to find out. These features contain information about real people from the past and present and from many different cultures who have had a great influence on what you study in algebra today.

What does algebra have to do with genetics? The **Application** on page 246 can answer this question. In these features, you'll discover how algebra is used in most of the subjects you study in school as well as in your everyday life.

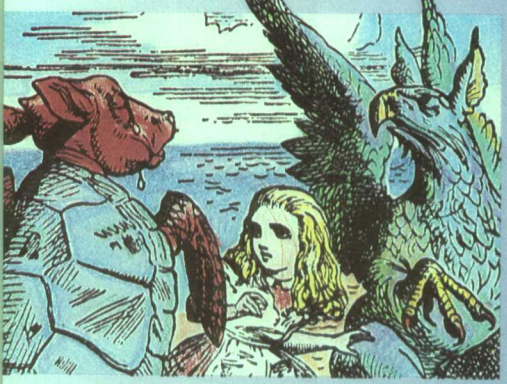
How can working together with my classmates help me solve problems? The fun, but challenging, problem presented in each **Cooperative Learning Activity** gives you an opportunity to cooperate, not compete, with other students.

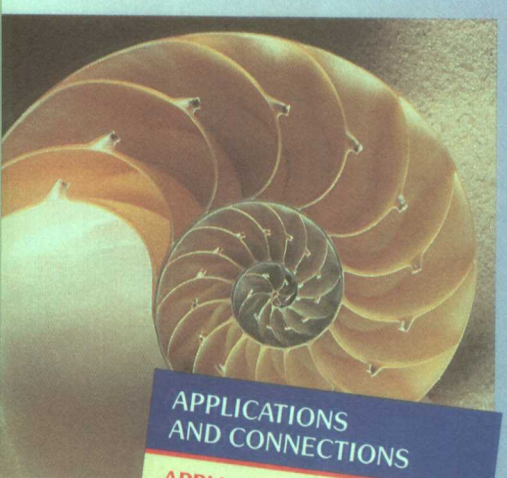
History Connections

Applications

Cooperative Learning Activities

APPLICATIONS AND CONNECTIONS





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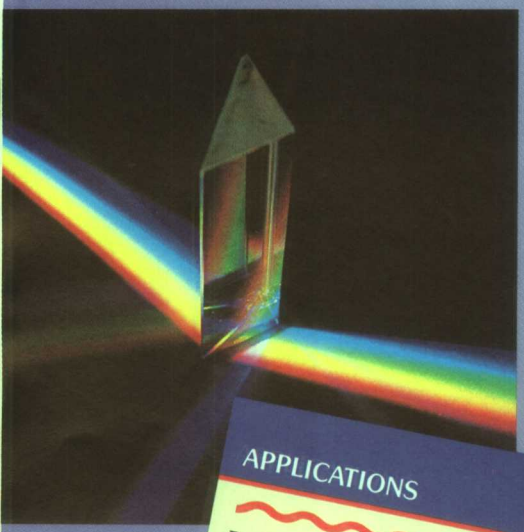


APPLICATIONS

SYMBOLS

$=$	is equal to
$\neq$	is not equal to
$>$	is greater than
$<$	is less than
$\geq$	is greater than or equal to
$\leq$	is less than or equal to
$\approx$	is approximately equal to
$\cdot$	times
$-$	negative
$+$	positive
$\pm$	positive or negative
$-a$	opposite or additive inverse of a
$\lvert a \rvert$	absolute value of a
$a \stackrel{?}{=} b$	Does a equal b?
π	pi
$\{\ \}$	set
%	percent
$^\circ$	degrees
$a{:}b$	ratio of a to b
$f(x)$	f of x, the value of f at x
(a, b)	ordered pair a, b
$\overline{AB}$	line segment AB
AB	measure of $\overline{AB}$
$\sqrt{\ }$	principal square root
$\cos A$	cosine of A
$\sin A$	sine of A
$\tan A$	tangent of A

Metric System

mm	millimeter
cm	centimeter
m	meter
km	kilometer
g	gram
kg	kilogram
mL	milliliter
L	liter
h	hour
min	minute
s	second
km/h	kilometer per hour
m/s	meters per second
°C	degrees Celsius

Understanding the Lesson

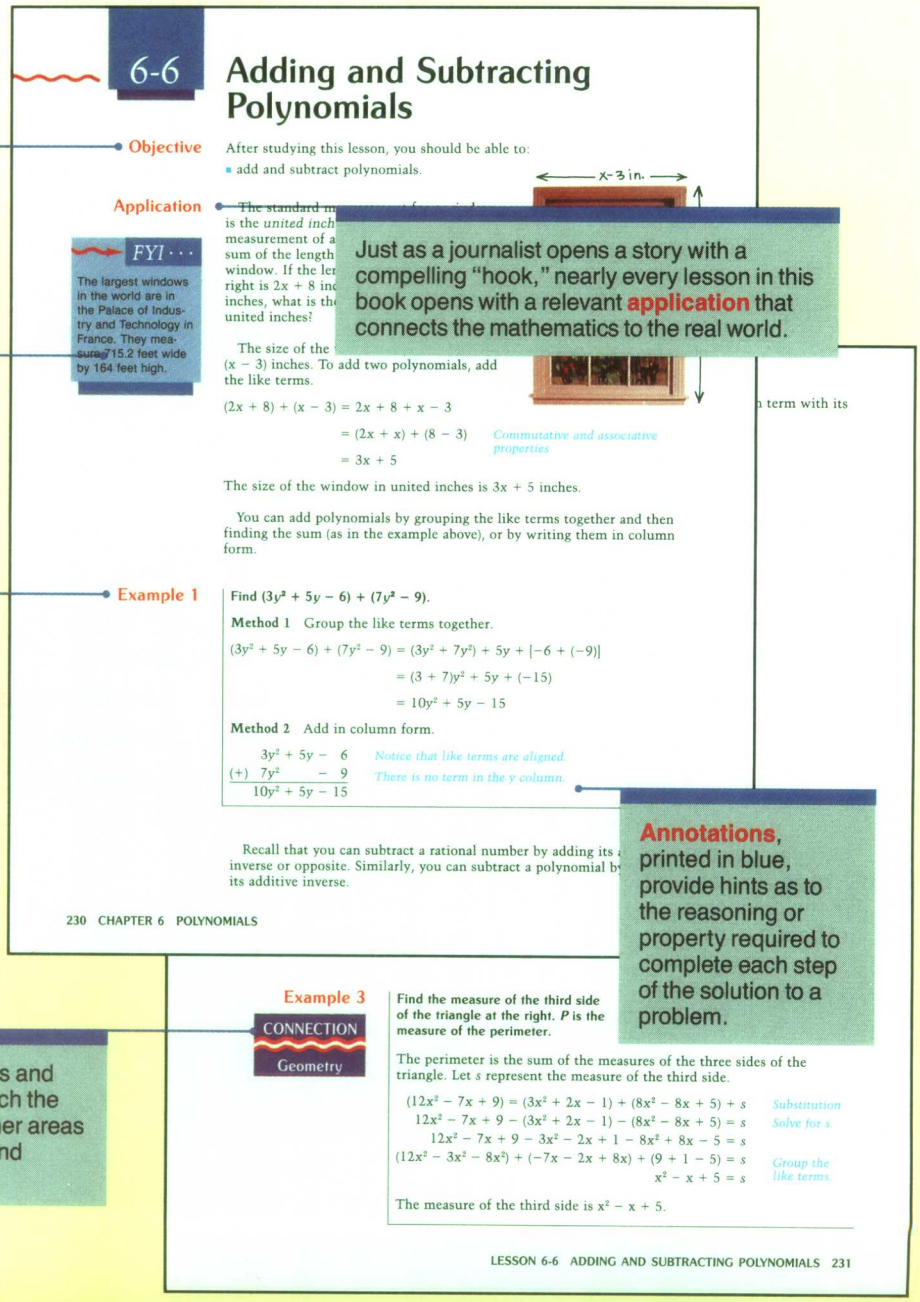
Each chapter is organized into lessons to make learning manageable. The basic plan of the lesson is easy to follow, beginning with a relevant application, followed by the development of the mathematical concept with plenty of examples, and ending with various types of exercises for you to complete.

Objectives clarify what concepts and skills you are expected to know after studying the lesson and completing the exercises.

Interesting math-related trivia and historical facts, presented in **FYI** — "for your information" — enhance the relevance of the mathematics content.

To help ensure your success in *Merrill Algebra 1*, completely worked out **examples** are provided for each type of practice exercise.

Connections, in both examples and exercises, highlight ways in which the study of algebra is related to other areas of mathematics like geometry and statistics.



6-6 Adding and Subtracting Polynomials

Objective
After studying this lesson, you should be able to:
- add and subtract polynomials.

Application
The standard m... is the *united inch*... measurement of a... sum of the length... window. If the le... right is 2x + 8 in... inches, what is th... united inches?

x - 3 in.

FYI · · ·
The largest windows in the world are in the Palace of Industry and Technology in France. They measure 715.2 feet wide by 164 feet high.

Just as a journalist opens a story with a compelling "hook," nearly every lesson in this book opens with a relevant **application** that connects the mathematics to the real world.

The size of the ... (x − 3) inches. To add two polynomials, add the like terms.

$(2x + 8) + (x - 3) = 2x + 8 + x - 3$
$= (2x + x) + (8 - 3)$ *Commutative and associative properties*
$= 3x + 5$

The size of the window in united inches is $3x + 5$ inches.

... term with its

You can add polynomials by grouping the like terms together and then finding the sum (as in the example above), or by writing them in column form.

Example 1
Find $(3y^2 + 5y - 6) + (7y^2 - 9)$.

Method 1 Group the like terms together.

$(3y^2 + 5y - 6) + (7y^2 - 9) = (3y^2 + 7y^2) + 5y + [-6 + (-9)]$
$= (3 + 7)y^2 + 5y + (-15)$
$= 10y^2 + 5y - 15$

Method 2 Add in column form.

$3y^2 + 5y - 6$ *Notice that like terms are aligned.*
$(+)\ 7y^2 \quad - 9$ *There is no term in the y column.*
$10y^2 + 5y - 15$

Recall that you can subtract a rational number by adding its ... inverse or opposite. Similarly, you can subtract a polynomial b... its additive inverse.

230 CHAPTER 6 POLYNOMIALS

Annotations, printed in blue, provide hints as to the reasoning or property required to complete each step of the solution to a problem.

Example 3
CONNECTION
Geometry

Find the measure of the third side of the triangle at the right. *P* is the measure of the perimeter.

The perimeter is the sum of the measures of the three sides of the triangle. Let *s* represent the measure of the third side.

$(12x^2 - 7x + 9) = (3x^2 + 2x - 1) + (8x^2 - 8x + 5) + s$ *Substitution*
$12x^2 - 7x + 9 - (3x^2 + 2x - 1) - (8x^2 - 8x + 5) = s$ *Solve for s.*
$12x^2 - 7x + 9 - 3x^2 - 2x + 1 - 8x^2 + 8x - 5 = s$
$(12x^2 - 3x^2 - 8x^2) + (-7x - 2x + 8x) + (9 + 1 - 5) = s$ *Group the like terms.*
$x^2 - x + 5 = s$

The measure of the third side is $x^2 - x + 5$.

LESSON 6-6 ADDING AND SUBTRACTING POLYNOMIALS 231